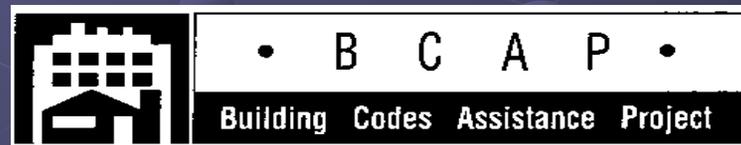


Hot Topics

Residential Wall and Foundation insulation

Michael C. DeWein
Technical Director





Key Elements of the 2004 IECC (cont'd)

- Elimination of Window/Wall Ratio
- Compliance methods reduced to 3:
 - single prescriptive table
 - UA trade-off
 - total home performance path (e.g. HERS)

Table 402.1

Insulation and Fenestration Requirements by Component

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^e WALL R-VALUE
1	1.20	0.75	0.40	30	13	3	13	0	0	0
2	0.75	0.75	0.40	30	13	4	13	0	0	0
3	0.65	0.65	0.40	30	15	5	19	0	0	5 / 13
4 except Marine	0.40	0.60	NR	38	15	5	19	10 / 13	10, 2 ft	10 / 13
5 and Marine 4	0.35	0.60	NR	38	21 or 15+5 ^f	13	30'	10 / 13	10, 2 ft	10 / 13
6	0.35	0.60	NR	49	21 or 15+5 ^f	15	30'	10 / 13	10, 4 ft	10 / 13
7 and 8	0.35	0.60	NR	49	21	19	30'	10 / 13	10, 4 ft	10 / 13

Hot Topic – Wall Insulation; Too Strict?

Table 402.1
Insulation and Fenestration Requirements by Component

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^e WALL R-VALUE
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Wall Insulation – Favors Fiberglass?

- Promotes Higher Levels of Efficiency
- Many Other Compliance Options!
- Alternative Compliance Paths
- Many Ways to Detail
- Promotes Advantages of Insulated Sheathing
- US-DOE Building America promotes better than R-13, 19 Wall systems as Cost-Effective
- Rising Costs of OSB, Other sheathing Favors Insulation.

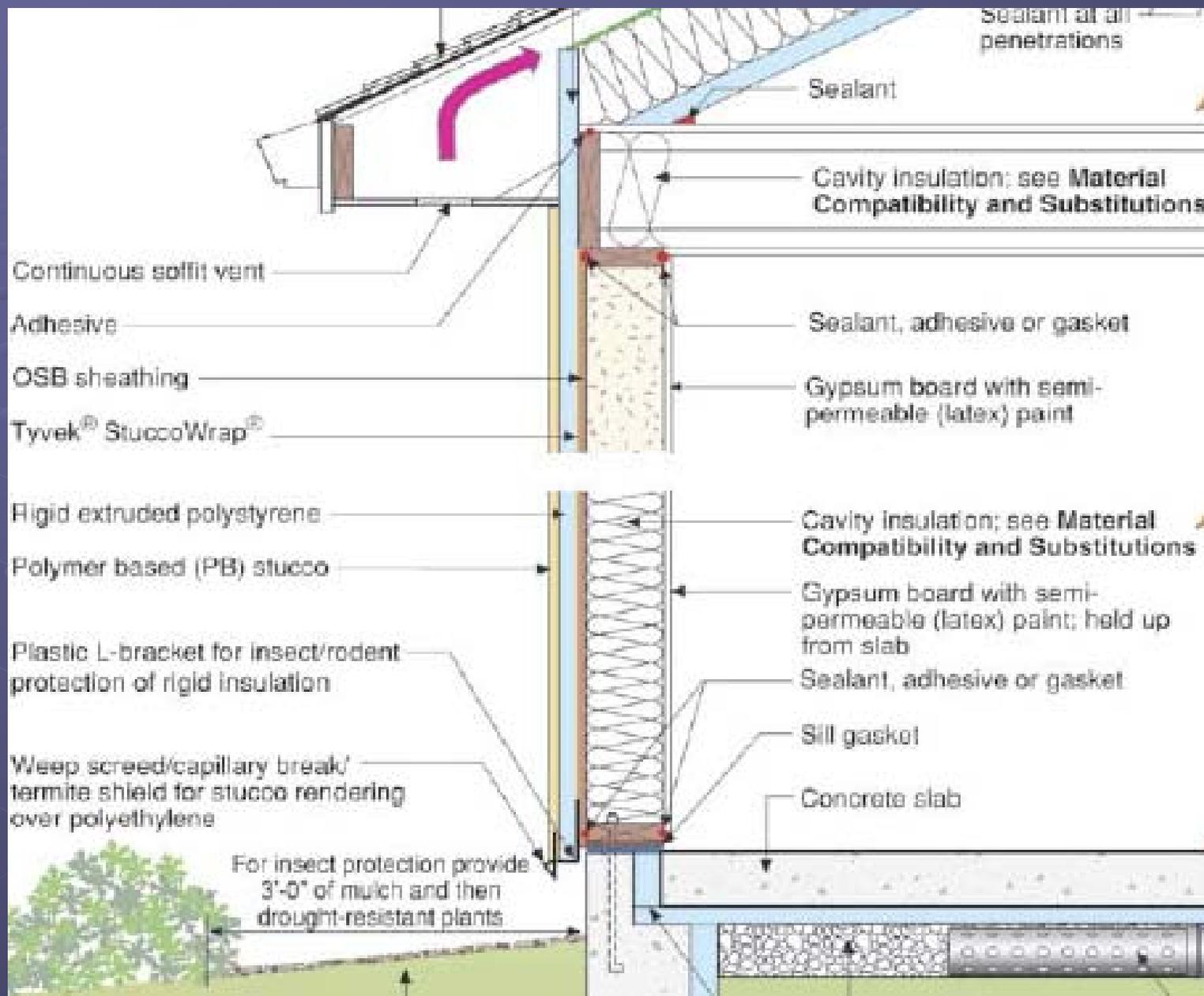
Wall Insulation – Options:

- $R-13 + R-2 \text{ Sheathing} = R-15$
- $R-13 + R-7 = R-15+5$
- $R-19+2 = R-21$
- Insulative sheathing may improve performance of cavity insulation
- Cut thermal shorts, improving overall wall performance.
- Many Options BUT many considerations as well...

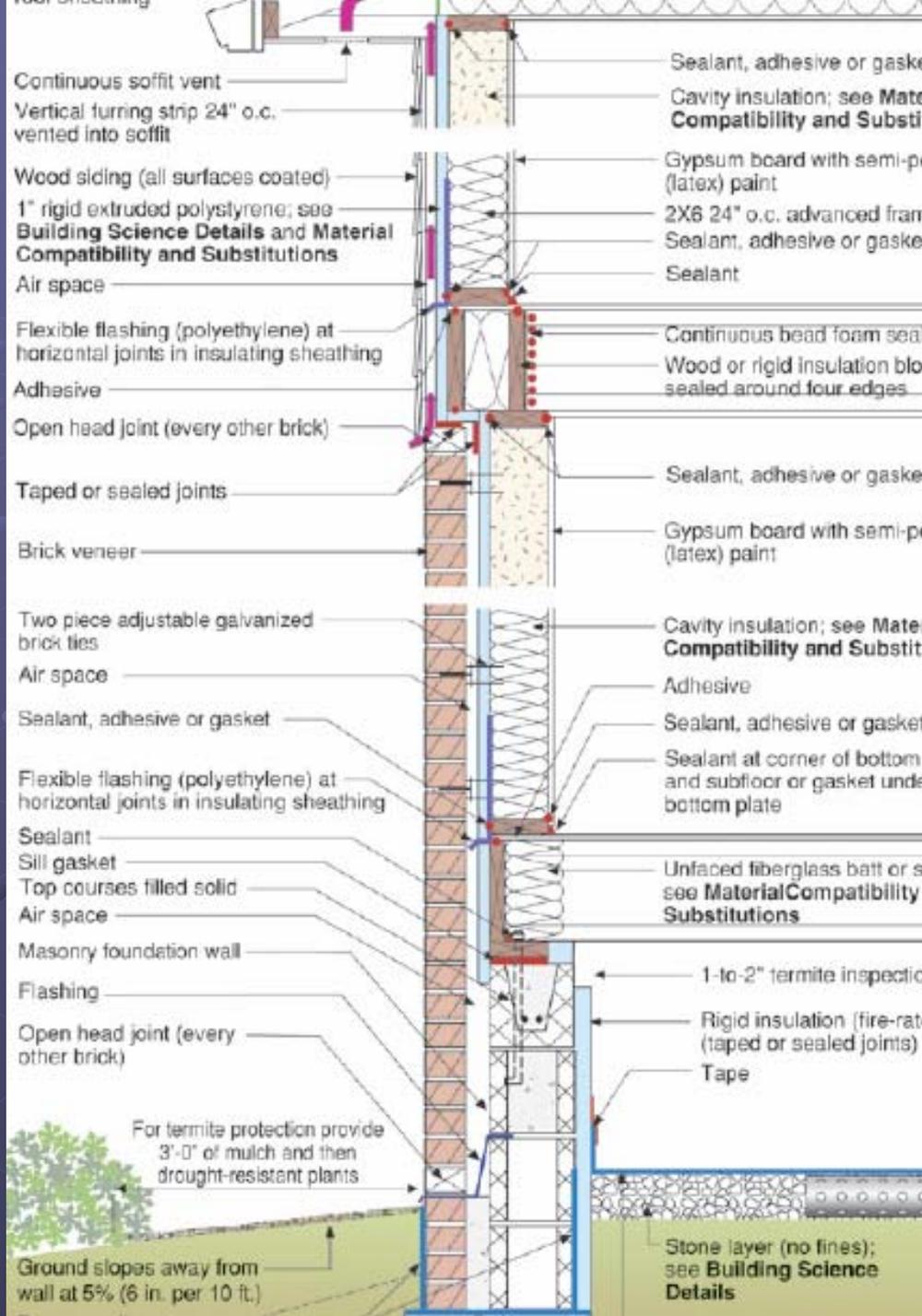
Wall Insulation: Options



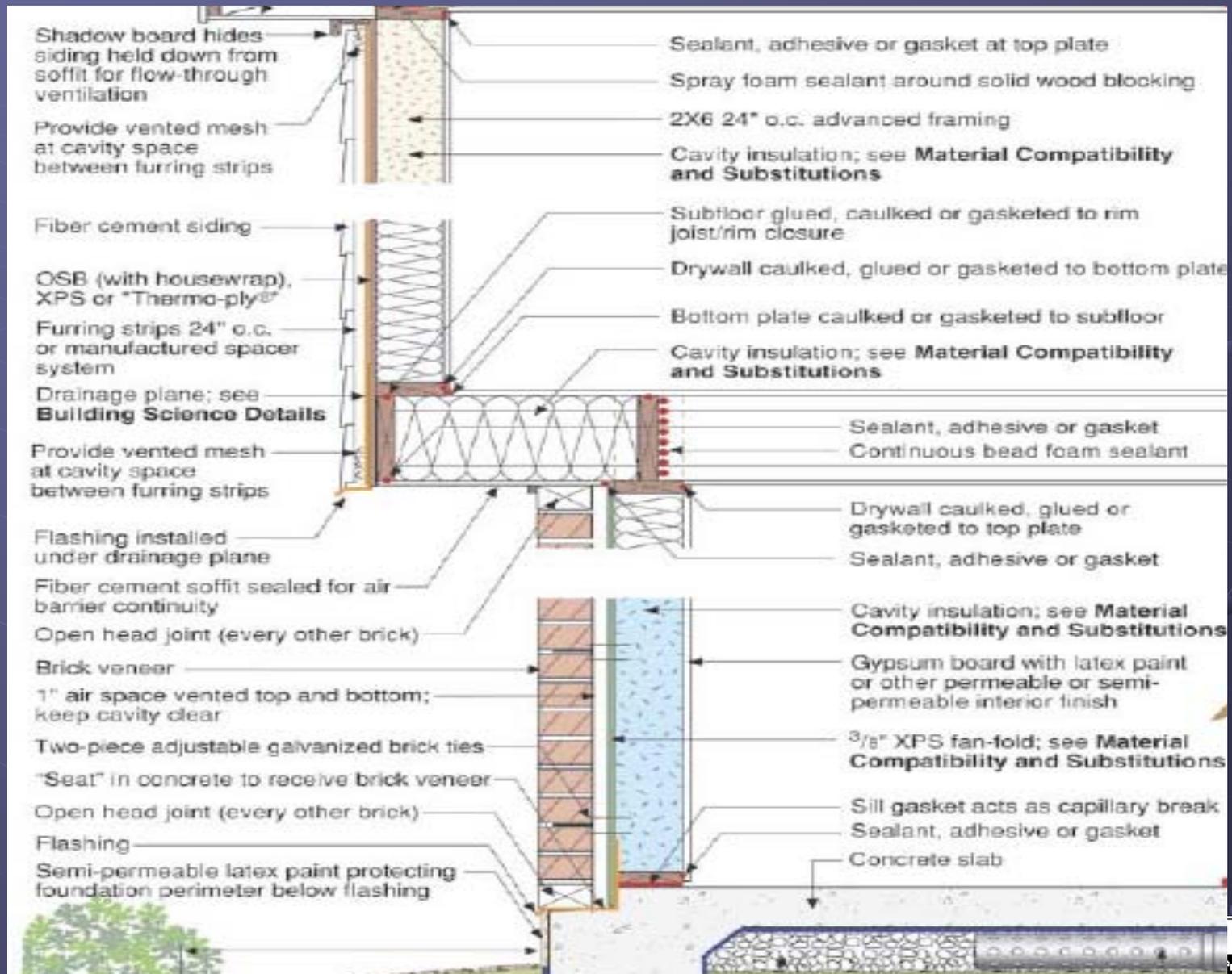
Wall Insulation: Options



Wall Insulation Considerations:



Wall Insulation Considerations



Hot Topic - Foundation Insulation

Table 402.1
Insulation and Fenestration Requirements by Component

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT ^b U-FACTOR	GLAZED FENESTRATION SHGC	CEILING R-VALUE	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE	FLOOR R-VALUE	BASEMENT ^c WALL R-VALUE	SLAB ^d R-VALUE & DEPTH	CRAWL SPACE ^c WALL R-VALUE
1	1.20	0.75	0.40	30	13	3	13	0	0	0
2	0.75	0.75	0.40	30	13	4	13	0	0	0
3	0.65	0.65	0.40	30	15	5	19	0	0	5 / 13
4 except Marine	0.40	0.60	NR	38	15	5	19	10 / 13	10, 2 ft	10 / 13
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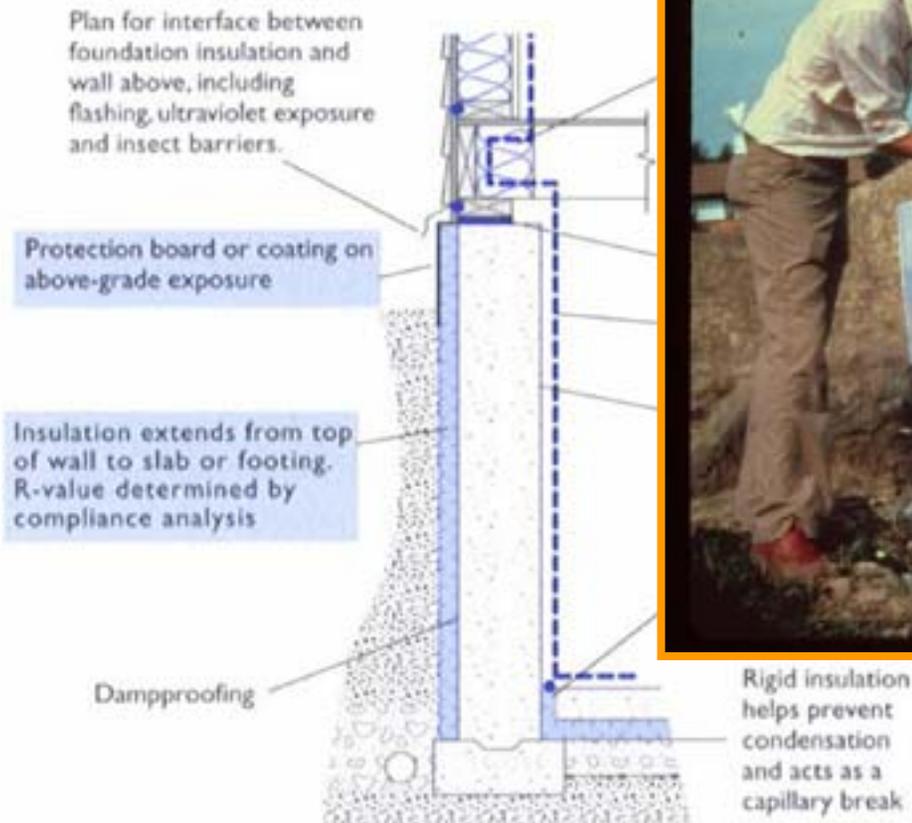
Foundation Insulation

- Too Strict? Better Option?
- Where's the Tradeoff?
- Cost-Effective?
- Inside or Out?
- Finishing for Durability
- **MOISTURE ISSUES!**
- **DETAIL ISSUES!**

Exterior Foam

FIGURE 6.4

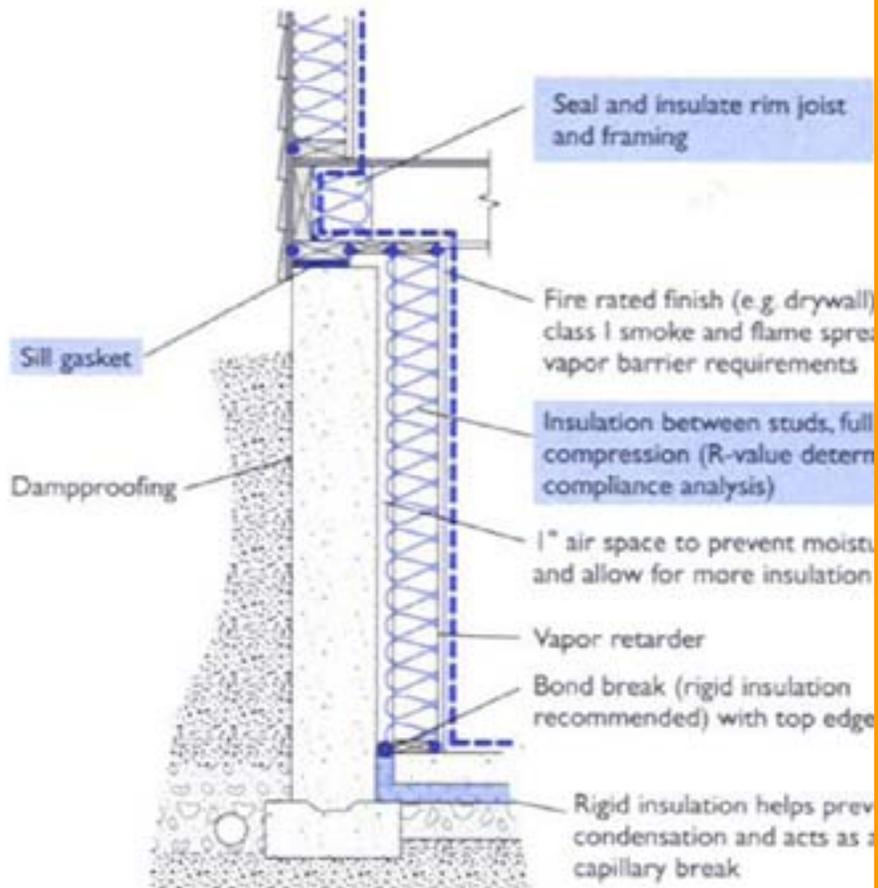
Basement with exterior rigid foam



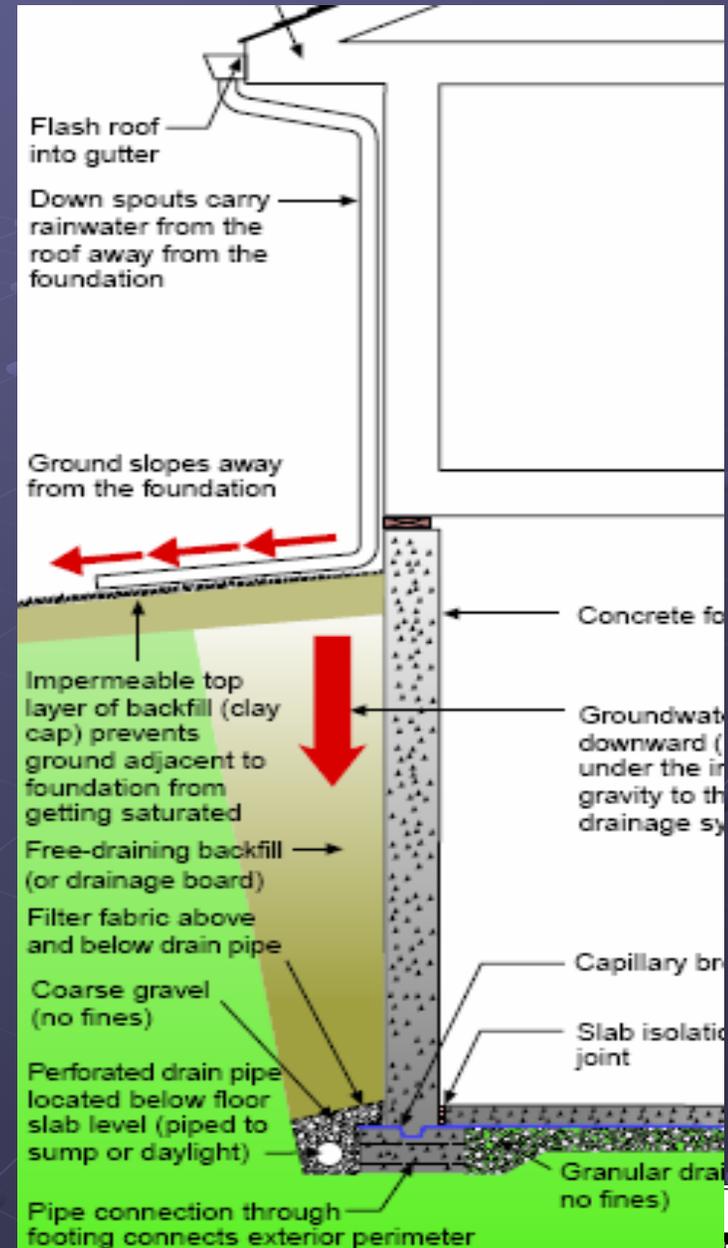
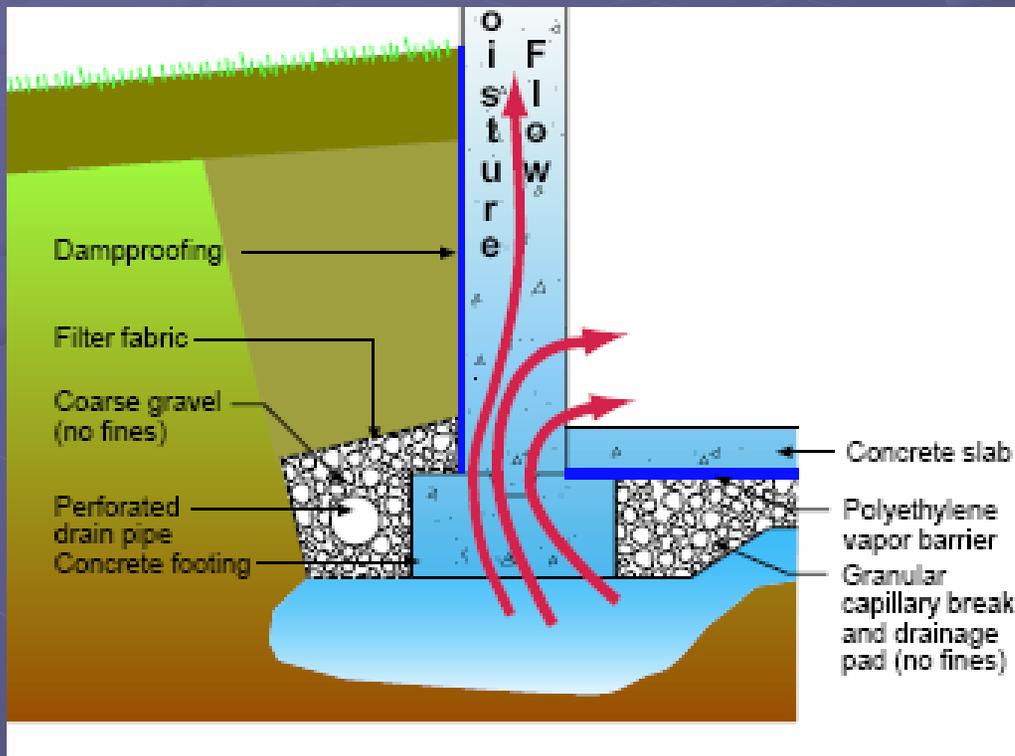
Interior Studding

FIGURE 6.3

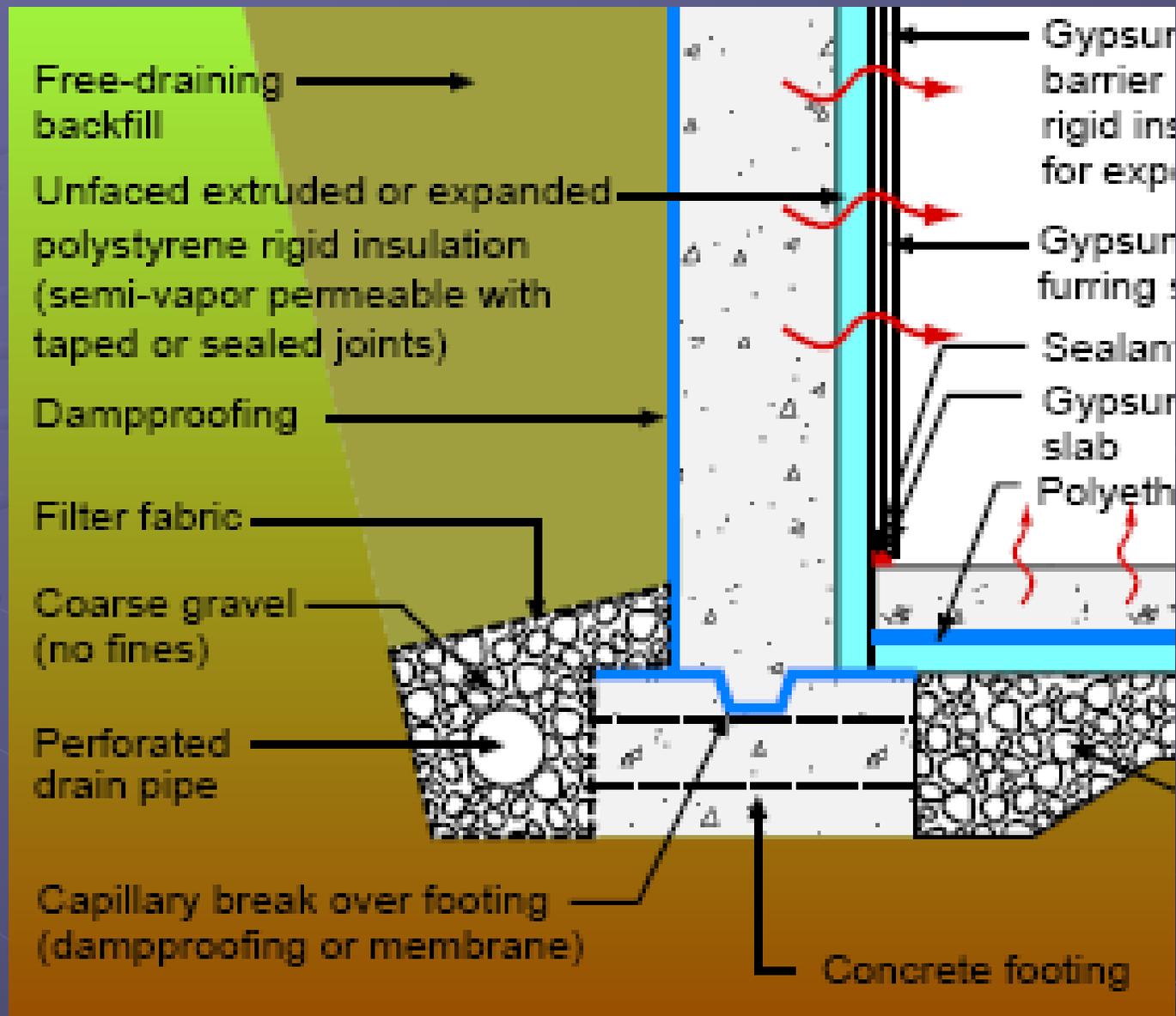
Basement with interior frame wall



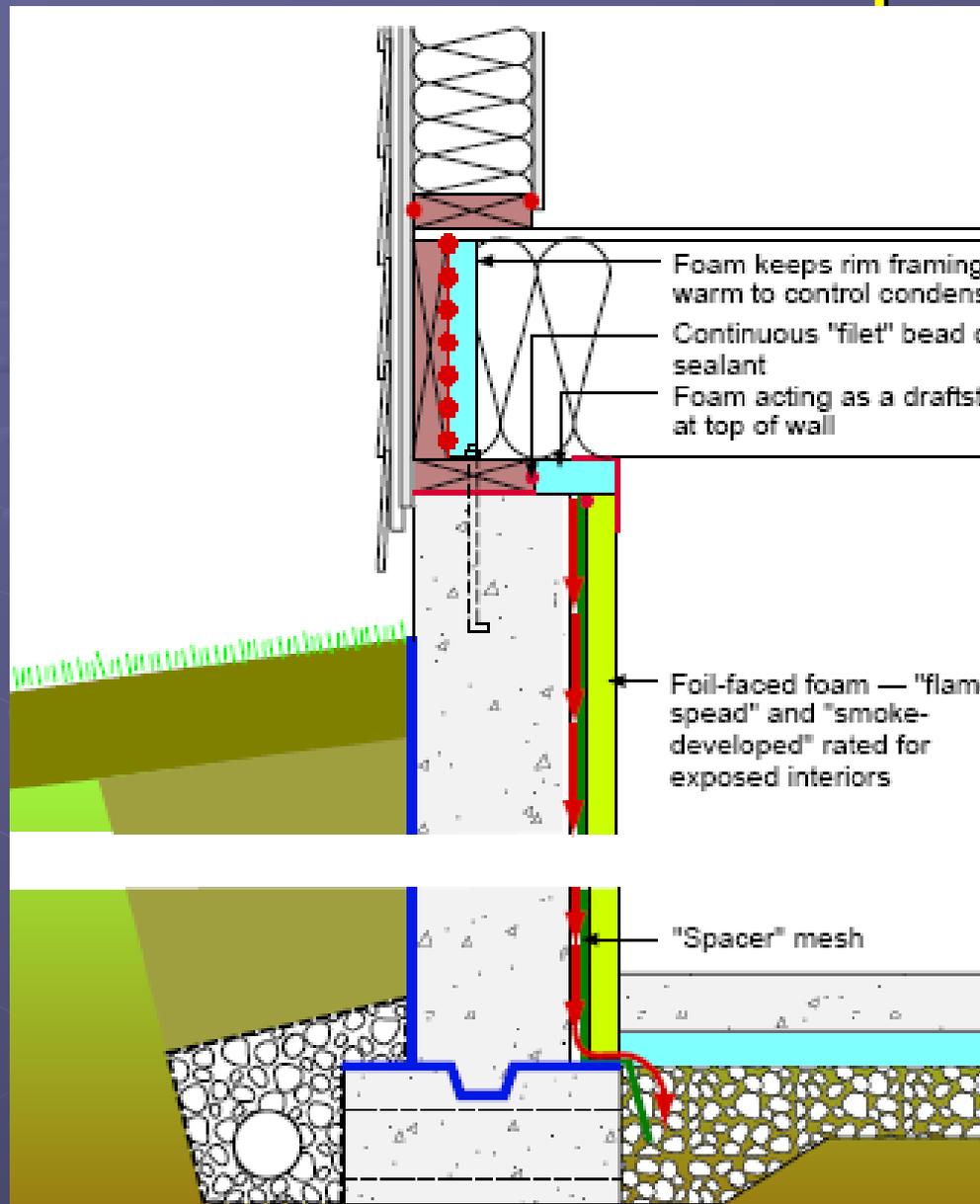
Foundation Insulation - Issues



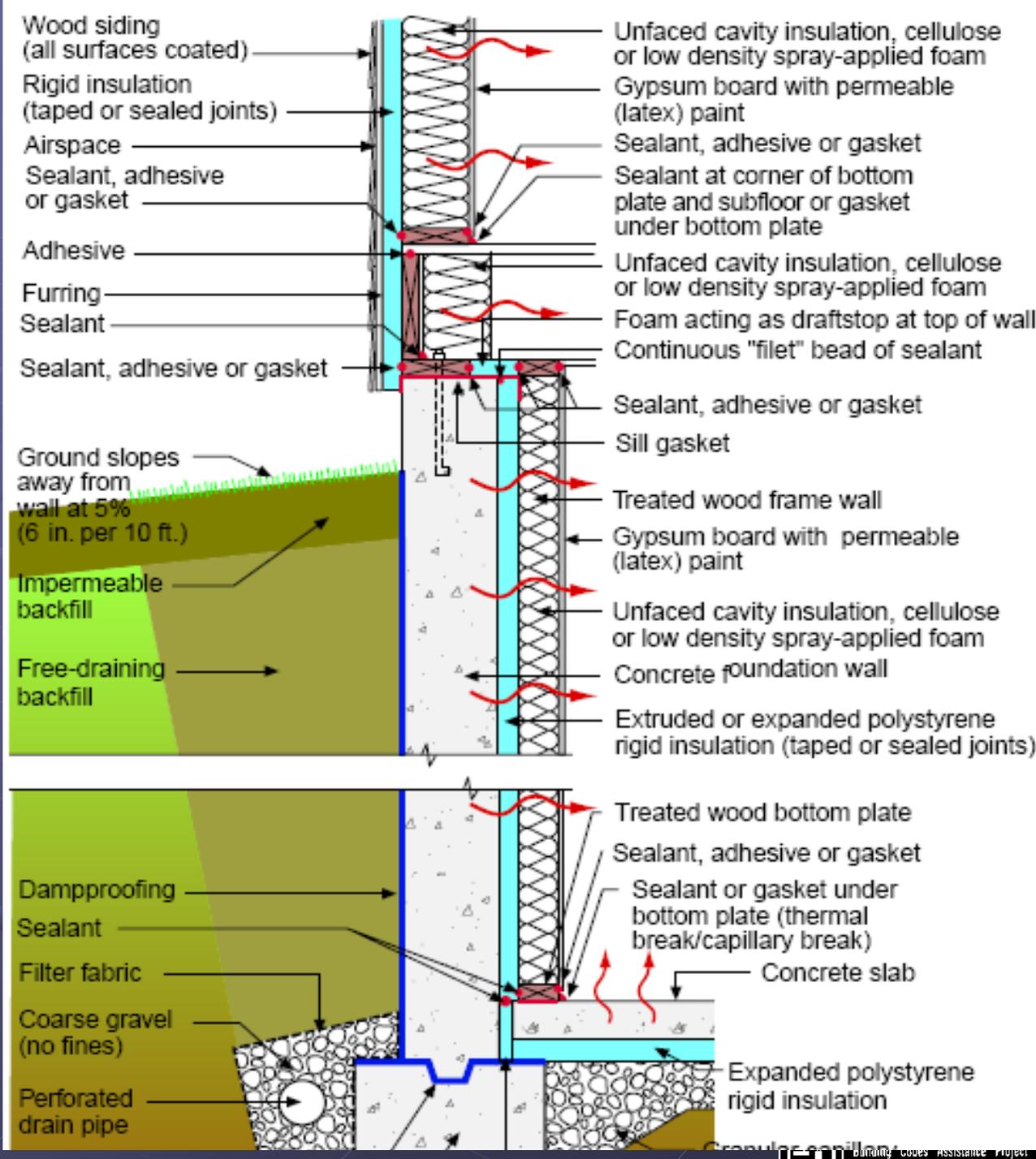
Foundation Insulation - Options



Foundation Insulation - Options



Foundation Insulation Options



Momentum for a Simple Residential Code

- Simple prescriptive code successfully being used in Oregon
- Versions of new IECC being considered in
 - Minnesota
 - New York
 - Massachusetts
 - Phoenix

Feedback?

- What kind of obstacles are you seeing/hearing?
- What positive impacts are you seeing?
- Save it for the Panel?

Resources

- International Code Council (purchase code)
iccsafe.org
- USDOE (support materials)
energycodes.gov
- BCAP (updates)
bcap-energy.org
- Building America Program
http://www.eere.energy.gov/buildings/building_america/
- Building Science Corp.
<http://www.buildingscience.com/>